CLAIMS

1. A fuel cell separator having a surface layer on one side or both sides thereof, the surface layer comprising at least two layers, wherein the surface layer comprises a low-elastic modulus layer (A) having a bending elastic modulus of 1.0×10^{1}-6.0×10^{3} MPa, and a bending strain of 1 % or more; and a high-elastic modulus layer (B) having a bending elastic modulus exceeding 6.0×10^{3} MPa, as at least one layer constituting the surface layer, other than the low-elastic modulus layer (A).

2. A fuel cell separator according to claim 1, wherein the layer (A) has a thickness of 0.5 mm or less, and the layer (B) has a thickness of 0.05-2 mm.

3. A fuel cell separator according to claim 1 or 2 having a layer structure of layer (A)/layer (B)/layer (A) and a total thickness of 0.2-3 mm, wherein the thickness ratio (A/B) therebetween is 0.001-1.

4. A fuel cell separator according to any of claims 1-3, wherein the layer (A) and/or layer (B) comprises an electroconductive resin composite material comprising 40-2 mass% of (a) resin binder, and 60-98 mass% of an electroconductive substance (b).

5. A fuel cell separator according to claim 4, wherein the comprises a component (a) including a thermoplastic or thermosetting resin composition of at least two component which comprises 20-99 mass% of an elastomer; and

the layer (B) comprises a component (a) including a thermoplastic or thermosetting resin composition which comprises at least one kind of a crystalline polymer having a melting point of 100°C or more, and/or an amorphous polymer having a glass transition point of 100°C or more.

6. A fuel cell separator according to claim 4, wherein the component (a) constituting the layer (A) and

the component (a) constituting the layer (B) comprises at least one species of a polymer of the same kinds, or components c providing a compatible polymer pair.

7. A fuel cell separator according to claim 4 or 5, wherein the component (a) is a composition comprising at least one kind selected from: phenolic resins, epoxy resins, vinyl ester resins, allyl ester resins, and 1,2-poly butadiene.

8. A fuel cell separator according to claim 4 or 5, wherein the component (a) is a composition comprising at least one kind selected from: polyolefins, polyphenyl sulfides, fluorine-containing resins, polyamides, and polyacetals.

9. A fuel cell separator according to claim 4, wherein the component (a) comprises a composition of a polyolefin, and at least one kind selected from: hydrogenated styrene-butadiene rubbers, styrene-ethylene-butylene-styrene block copolymers, styrene-ethylene-propylene-styrene block copolymers, crystalline olefin-ethylene-butylene-crystalline olefin block copolymers, styrene-ethylene-butylene-crystalline olefin block copolymers, styrene-isoprene-styrene block copolymers, and styrene-butadiene-styrene block copolymer.

10. A fuel cell separator according to claim 4, wherein the component (a) comprises polyvinylidene fluoride and soft acrylic resin.

11. A fuel cell separator according to any of claims 4-10, wherein the component (b) is at least one kind of substance selected from: metals, carbonaceous materials, electroconductive polymers, and metal-coated fillers.

12. A fuel cell separator according to any of claims 4-10, wherein the component (b) is a carbonaceous material comprising boron in an amount of 0.05-5 mass%.

13. A fuel cell separator according to any of claims 4-12, wherein the component (b) comprises 0.1-50 mass% of vapor-phase grown carbon fiber and/or carbon

nanotube.

14. A fuel cell separator according to claim 13, wherein the vapor-phase grown carbon fiber or carbon nanotube contains boron in an amount of 0.05-5 mass%.

15. A process for producing a fuel cell separator having a surface layer on one side or both sides thereof, the surface layer comprising at least two layers, wherein the surface layer comprises a low-elastic modulus layer (A) having a bending elastic modulus of 1.0×10^{1}-6.0×10^{3} MPa, and a bending strain of 1 % or more; and a high-elastic modulus layer (B) having a bending elastic modulus exceeding 6.0×10^{3} MPa, as at least one layer constituting the surface layer, other than the low-elastic modulus layer (A);

the process comprising: molding a low-elastic modulus layer (A) and a high-elastic modulus layer (B) by at least one method selected from rolling, compression molding and stamping, to thereby provide a laminate having a groove on both sides thereof.

16. A process for producing a fuel cell separator having a surface layer on one side or both sides thereof, the surface layer comprising at least two layers, wherein the surface layer comprises a low-elastic modulus layer (A) having a bending elastic modulus of 1.0×10^{1}-6.0×10^{3} MPa, and a bending strain of 1 % or more; and a high-elastic modulus layer (B) having a bending elastic modulus exceeding 6.0×10^{3} MPa, as at least one layer constituting the surface layer, other than the low-elastic modulus layer (A);

the process comprising: molding a low-elastic modulus layer (A) and a high-elastic modulus layer (B) by at least one method selected from multi-layer extruding, multi-layer injection molding, compression molding or rolling, to thereby provide a laminate in the form of a sheet; and

forming a groove on both sides of the

laminate by compression molding or stamping.

17. A process for producing a fuel cell separator according to claim 15 or 16, wherein the layer (A) has a thickness of 0.5 mm or less, and the layer (B) has a thickness of 0.05-2 mm.

18. A process for producing a fuel cell separator according to claim 15 or 16, wherein the fuel cell separator has a layer structure of layer (A)/layer (B)/layer (A) and a total thickness of 0.2-3 mm, and the thickness ratio (A/B) therebetween is 0.001-1.